

Approved for use through 10/31/2002. OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449A/PTO

Complete if Known

(use as many sheets as necessary)

Sheet 1 of 5 Attor

Application Number	09/597,076
Filing Date	January 20, 2000
First Named Inventor	Yuanning Chen
Art Unit	2813
Examiner Name	Kielin, Erik S.
Attorney Docket Number	CHEN 4-17-157

U.S. PATENT DOCUMENTS					
Examiner Initials ²	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number- Kind Code ² (if known)			
EX		US- 6,281,559	08/28/2001	Yu et al.	
ER		US- 6,281,140	08/28/2001	Chen et al.	
EX		US- 6,222,233	04/24/2001	D'Anna	
EX		US- 6,210,999	04/03/2001	Gardner et al.	
EX		US- 6,197,641	03/06/2001	Hergenrother et al.	
EX		US- 6,180,454	01/30/2001	Chang et al.	
EX		US- 6,083,836	07/04/2000	Rodder	
EX		US- 6,083,815	07/04/2000	Tsai et al.	
EX		US- 6,069,062	05/30/2000	Downey	
EX		US- 6,029,680	02/29/2000	Hawthorne et al.	
EX		US- 6,027,975	02/22/2000	Hergenrother et al.	
EX		US- 6,025,280	02/15/2000	Brady et al.	
EX		US- 6,020,247	02/01/2000	Wilk et al.	
EX		US- 6,008,128	12/28/1999	Habuka et al.	
EX		US- 5,972,804	10/26/1999	Tobin et al.	
EX		US- 5,968,279	10/19/1999	MacLeish et al.	
EX		US- 5,918,137	06/29/1999	Ng et al.	
EX		US- 5,913,149	06/15/1999	Thakur et al.	
EX		US- 5,891,809	04/06/1999	Chau et al.	
EX		US- 5,877,057	03/02/1999	Gardner et al.	

FOREIGN PATENT DOCUMENTS					
Examiner Initials ¹	Cite No. 1	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code ³ - Number ⁴ - Kind Code ⁵ (if known)	MM-DD-YYYY		
		IP 01 204435	08/17/1989	Doklan et al.	
		EP 0 323 071	07/05/1989	Doklan et al.	
		EP 0 301 460	02/01/1989	Benett	
		JP 62 079 628	04/13/1987	Seichi	
		GB 2 056 174	03/11/1981	Risch et al.	

11/12/02

compliance and not considered. Indicate copy of the form in the communication to applicant.

¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.**

PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
red to respond to a collection of information unless it contains a valid OMB

Substitution for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Complete if Known	
				Application Number	09/597,076
				Filing Date	January 20, 2000
				First Named Inventor	Yuanning Chen
				Art Unit	2813
				Examiner Name	Kielin, Erik S.
				Attorney Docket Number	CHEN 4-17-157
Sheet	2	of	5		

U.S. PATENT DOCUMENTS					
Examiner Initials ¹	Cite No. ¹	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code ² (if known)			
ER		US- 5,869,405	02/09/1999	Gonzalez et al.	
ER		US- 5,867,425	02/02/1999	Wong	
ER		US- 5,863,831	01/26/1999	Ling et al.	
ER		US- 5,821,158	10/13/1998	Shishiguchi	
ER		US- 5,814,562	09/29/1998	Green et al.	
ER		US- 5,757,204	05/26/1998	Nayak et al.	
		US- 5,629,221	05/13/1997	Chao et al.	
		US- 5,632,607	04/23/1997	Yamazaki et al.	
		US- 5,619,052	04/08/1997	Chang et al.	
		US- 5,598,369	01/28/1997	Chen et al.	
		US- 5,567,638	10/22/1996	Lin et al.	
		US- 5,514,608	05/07/1996	Williams et al.	
		US- 5,371,394	12/06/1994	Ma et al.	
		US- 5,334,556	08/03/1994	Guldi	
		US- 5,153,701	10/06/1993	Roy	
		US- 5,089,441	07/18/1992	Moslehi	
		US- 5,077,691	12/31/1991	Haddad et al.	
		US- 5,016,081	05/14/1991	Brown et al.	
		US- 4,272,320	03/07/1991	Begwala et al.	
		US-			

[illegible]

Examiner Signature		Date Considered	11/12/02
-----------------------	---	--------------------	----------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

compliance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.**

PTO/SB/08A (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitution for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Complete if Known	
				Application Number	09/597,076
				Filing Date	January 20, 2000
				First Named Inventor	Yuanning Chen
				Art Unit	2813
				Examiner Name	Kielin, Erik S.
				Attorney Docket Number	CHEN 4-17-157
Sheet	3	of	5		

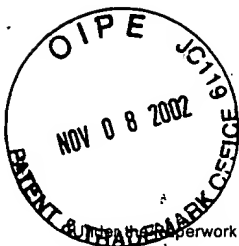
[illegible][illegible]

Examiner Signature		Date Considered	11/12/02
-----------------------	--	--------------------	----------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



PTO/SB/08B (10-01)
Approved for use through 10/31/2002. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Complete if Known	
		Application Number	09/597,076
		Filing Date	January 20, 2000
		First Named Inventor	Yuanming Chen
		Group Art Unit	2813
		Examiner Name	Kielin, Erik S.
		Attorney Docket Number	CHEN 4-17-157

Sheet	4	of	5
-------	---	----	---

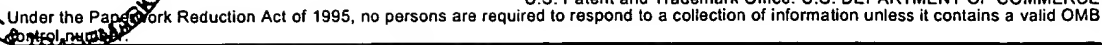
OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue, number(s), publisher, city and/or country where published	T ²
		Ponomarev et al.; High-Performance Deep Submicron CMOS Technologies with Polycrystalline-SiGe Gates; IEEE Transactions on Electron Devices, Vol. 47, No. 4; April 2000; pp. 848-855.	
		Lee et al.; Enhancement of PMOS Device Performance with Poly SiGe Gate; IEEE Electron Device Letters, Vol. 20, No. 5; May 1999; pp. 232-234.	
		Song et al.; Ultra Thin (<20) CVD Si3N4 Gate Dielectric for Song et al.; Ultra Thin (<20) CVD Si3N4 Gate Dielectric for Deep Sub Micron CMOS Devices; Microelectronics Research Center, The University of Texas, Austin; 4 pgs.	
		Hattangady et al.; Ultrathin nitrogen-profile engineered gate dielectric films; Semiconductor Process and Device Center, Texas Instruments; 4 pgs.	
		Tseng et al.; Reduced Gate Leakage Current and Boron Penetration of 0.18 m 1.5 V MOSFETs Using Integrated RTCVD Oxynitride Gate Dielectric; 4 pgs.	
		Hattangady et al.; Remote Plasma Nitrided Oxides for Ultrathin Gate Dielectric Applications; SPIE 1998 Symp. Microelec. Manf.; September 1998; Santa Clara, CA; pp. 1-11.	
		Wu et al.; Improvement of Gate Dielectric Reliability for p+ Poly MOS Devices Using Remote PECVD Top Nitride Deposition on Thin Gate Oxides; IEEE 98 36th Annual International Reliability Physics Symposium; Reno, Nevada; 1998; pp. 70-73.	
		Chatterjee et al.; Sub-100nm Gate Length Metal Gate NMOS Transistors Fabricated by a Replacement Gate Process; Semiconductor Process and Device Center, Texas Instruments; 1997 IEEE; 4 pgs.	
		Kraft et al.; Surface nitridation of silicon dioxide with a high-density nitrogen plasma; J. Vac. Sci. Technol. B, Vol. 15, No. 4; 1997 American Vacuum Society; July/August 1997; pp. 967-970.	
		Jeon et al.; Low Temperature Preparation of SiO2 Films With Low Interface Trap Density Using ECR Diffusion and ECR CVD Methods; 1996 Conference on Optoelectronic and Microelectronic Materials and Devices Proceedings, Canberra, ACT, Australia, 8-11 December 1996; pp. 259-262.	
		Rau et al.; Characterization of stacked gate oxides by electron holography; Appl. Phys. Lett., Vol. 68, No. 24; 1996 American Institute of Physics; 10 June 1996; pp. 3410-3412.	

Examiner Signature		Date Considered	11/12/02
--------------------	--	-----------------	----------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



Approved for use through 10/31/2002 OMB 0651-0031

U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB

Examiner Signature		Date Considered	11/12/02
--------------------	---	-----------------	----------

¹ Applicant's unique citation designation number (optional). ² Applicant is to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO:** Assistant Commissioner for Patents, Washington, DC 20231.